

### Remarks

In the official action mailed September 17, 2007, the examiner maintained the following rejections.

1. The rejection of claims 1-7, and 11 under 35 U.S.C. § 103(a) over Chinese patent 1153218 (CN'218) in view of Soviet Union Patent 1678867 (SU'867), or U.S. Patent No. 3,816,099 to Stewart et al., or U.S. Patent No. 3,809,547 to Lewis et al.
2. The rejection of claims 1-7, and 11 under 35 U.S.C. § 103(a) over U.S. Patent No. 4,919,711 to Banyai et al.
3. The rejection of claim 10 under 35 U.S.C. § 103(a) over Soviet Union Patent 1678867 (SU'867), or U.S. patent No. 3,816,099 to Stewart et al., or U.S. Patent No. 3,809,547 to Lewis et al. as applied to claim 1, and further in view of Japanese Patent 03-023243 (JP'243, Ceramics Monthly (2001) and digitalfire.com (2001).
4. The rejection of claim 10 under 35 U.S.C. § 103(a) over Banyai et al. as applied to claim 1 and further in view of Japanese Patent 03-023243 (JP'243), Ceramics Monthly (2001) and digitalfire.com (2001).

In response to the rejections applicants provide the following distinguishing comments, which are believed to place the present case in condition for allowance. Favorable reconsideration of all of the pending claims is respectfully requested.

#### **I. The Rejection of Claims 1-7, and 11 Under 35 U.S.C. § 103(a) over CN'218 in view of SU'867, or Stewart et al., or Lewis et al.**

Regarding CN'218, applicants agree with the examiner that CN'218 does not disclose a sodium borate and/or sodium tetraborate additive (see office action at page 4, 3<sup>rd</sup> full paragraph). What CN'218 does disclose is a compound additive that uses bentonite, carboxycellulose, boric acid, cement, **boron sludge** and feldspar as raw materials. Further, it is important to note that the use of boric acid has a negative affect

on the performance of carboxymethylcellulose in pelletizing. More specifically, boric acid, when used in the system of the claimed invention without a buffering system built in to negate the effects of acidic pH, would DESTROY or REDUCE the binders efficiency. Acidic conditions neutralize the effects of CMC and it's ability to hydrate, viscosify, and control water during pelletizing. Without wishing to be bound by any particular theory, the reason why the CN'218 is probably able to use boric acid is because they utilize a complex recipe which uses cements, bentonites, etc which will react and eliminate the harmful effects that the boric acid would have on CMC. By utilizing sodium tetraborate as claimed the requirements for buffering agents like cement or bentonite is obviated.

In order to alleviate the substantial deficiencies of the primary reference, the examiner relies on SU'867, Stewart and/or Lewis.

SU'867 relates to the manufacture of unfired pellet based fuel flux ore. SU'867 utilizes borax or boric acid to produce a protective coating on the solid fuel particle surface to prevent the early reaction between the fuel and Fe oxides when the pellets melt. There is no motivation to combine the process of CN'218 and SU'867 because they are directed to non-analogous processes. Further, it is improper for the examiner to selectively rely on isolated teachings of these non-analogous processes in order to reject the claimed invention without looking what each of these references as a whole, teach the skilled artisan.

Stewart relates to a beneficiation process wherein flux is utilized in order to assist in producing metallic iron concentrates and high grade titanium dioxide. The fact that boric acid and/or borax "may" be equivalent as fluxes in the beneficiation process of Stewart is irrelevant to the claimed agglomeration process. So, like SU'867, absent hindsight reliance on applicants' disclosure, Stewart simply cannot alleviate the substantial deficiencies of CN'218.

Lewis discloses a method and additive for increasing the dissolution of lime in the slag of an electric furnace. Acceptable additives include boron containing compounds such as boric acid and sodium tetraborate. The method of Lewis has absolutely nothing to do with the agglomeration process of the claimed invention. Thus, the fact that Lewis teaches that boric acid and sodium tetraborate may be used as additives for increasing the dissolution of lime in the slag of an electric furnace is totally irrelevant to the claimed invention.

In support of the continued rejection of applicants claims, the examiner alleges the following.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use sodium tetraborate (borax) as taught by SU'867, or Stewart et al. or Lewis et al. in the pellets of '218 since SU'218 or Stewart et al. or Lewis et al. teach that sodium tetraborate (borax) is recognized as equivalent or substitute for boric acid.

Applicants strongly disagree. More specifically, the examiner appears to be alleging that sodium tetraborate and boric acid are equivalents because of the teachings in Lewis and Stewart. While this may be true in the **smelting** or **iron making** processes that they describe, it is NOT true when you are pelletizing iron ore concentrates with a CMC binder. As previously mentioned, boric acid neutralizes the effects of CMC based binders and would similarly have a very negative effect on pelletizing at the addition rates presently claimed. CMCs are not compatible with acidic compounds; in fact CMC is actually made insoluble or destroyed by acids. Thus, it is totally unsupported for the examiner to allege that the cited references teach the interchangeability or equivalence of sodium tetraborate and boric acid in pelletizing. Should the examiner disagree, then applicants respectfully request that the examiner clearly articulate the basis for this conclusion in the cited art.

In summary, applicants respectfully submit that the primary reference clearly does not render the claimed invention unpatentable because the process and binder additives of the invention are clearly not disclosed or suggested by CN'218. Further, the secondary references all relate to non-analogous processes, i.e., SU'867 relates to the manufacture of unfired pellet based fuel flux ore; Stewart relates to a beneficiation process; and Lewis discloses a method and additive for increasing the dissolution of lime in the slag of an electric furnace. The fact that each of the secondary documents may suggest that boric acid and borax are equivalent for their respective processes is irrelevant because NONE of these documents discloses or suggests that they are equivalent in the claimed agglomeration process.

Additionally, since the secondary documents all relate to non-analogous processes, applicants respectfully submit that absent hindsight reliance on applicants' disclosure, there is simply no motivation to combine them with the process of CN'218. In view of the above, applicants respectfully submit that it would not have been obvious to one of ordinary skill in the art to use the sodium tetraborate of SU'867, or Stewart, or Lewis in the pellets of CN'218 since none of the secondary documents disclose or suggest that they are equivalent in agglomeration processes in general, or in improving the preheat strength of agglomerates as made by the claimed process.

The examiner is also directed to the dependent claims in the present case. In its narrowest embodiments, the invention contemplates a binder system that utilized a salt of carboxymethyl cellulose and sodium tetraborate. None of the documents cited disclose or suggest such a binder system.

In view of the foregoing, the present rejection is believed to be improper; reconsideration and withdrawal thereof is respectfully requested.

**II. The Rejection of Claims 1-7, and 11 Under 35 U.S.C. § 103(a) Over Banyai et al.**

Banyai discloses a binder for agglomerating a concentrated ore in the presence of water comprising

1. a water-soluble polymer such as CMC, and
2. sodium tripolyphosphate.

Sodium tetraborate is mentioned in 3-12 as a comparative example, but the examiner is respectfully requested to note that the performance of the binder of 3-12 is **clearly inferior** to that of Banyai's binder. Thus, because of this poor performance, applicants respectfully submit that one of ordinary skill in the art would actually construe Banyai as **teaching against** the use of sodium tetraborate as a binder additive. In view of the foregoing, applicants respectfully submit that the Banyai cannot be reasonably construed as rendering the claimed invention obvious; reconsideration and withdrawal thereof is respectfully solicited.

**III. The Rejection of Claim 10 Under 35 U.S.C. § 103(a) over CN'218 in view of SU'867, or Stewart et al., or Lewis et al. as applied to claim 1, and further in view of JP'243, Ceramics Monthly (2001) and digitalfire.com (2001).**

Applicants' distinguishing comments with respect to CN'218, SU'867, Stewart et al., and Lewis et al. are incorporated herein by reference.

The fact that borax, colemanite or ulexite may be equivalents in the **process for modifying slag** of JP'243 **DOES NOT** mean that such compounds would perform equivalently in the claimed agglomeration process. Thus, it is not seen how JP'243 can reasonable be interpreted as alleviating the deficiencies of the primary reference. Further, the source of the boron is very critical for the claimed process, which is why sodium tetraborate is a preferred boron source. Most natural borates, like colemanite, ulexite, etc. contain sufficient levels of water soluble calcium, which also negatively affects the performance CMCs in pelletizing. Just because these elements contain boron, does not make them equivalent in pelletizing. The boron-source must be Ca++ free, and neutral to basic in pH to be used with an organic binder based on CMC. In

order for the boron material to work in the claimed system the boron compound must be based on an alkali earth metal (Na+, K+).

Ceramics Monthly (2001) relates to **ceramic bodies**, which is totally unrelated to the claimed invention. Further, the fact that this document recognizes that certain materials are equivalent for ceramics does not mean, or suggest that such materials are equivalent in applicants' agglomeration processes.

Digitalfire.com appears to relate to **pottery making**. Again, the fact that certain materials may be equivalent for pottery purposes DOES NOT mean that they would be equivalent in the claimed agglomeration process. This is reinforced by the following statement found at line 3 of Digitalfire.com: "No one material or approach is going to be a miracle substitute, that is guaranteed." If such materials are not guaranteed to be substitutes in pottery making...what evidence does the examiner have that they would be acceptable substitutes in applicants' process?

In view of the foregoing, applicants respectfully submit that the examiner has not made out a sustainable rejection of claim 10 under 35 U.S.C. 103(a). The rejection is therefore believed to be improper; reconsideration and withdrawal thereof is respectfully requested.

**IV. The Rejection of Claim 10 Under 35 U.S.C. § 103(a) Over Banyai et al. as applied to claim 1 and further in view of JP'243, Ceramics Monthly (2001) and digitalfire.com (2001).**


Initially, the distinguishing comments made with respect to Banyai, JP'243, ceramics Monthly and Digitalfire.com are incorporated herein by reference. As discussed in detail above, the secondary references all relate to non-analogous processes and there is absolutely no teaching or motivation for picking isolated teachings within those documents and combining them with Banyai. The rejection is

therefore believed to be improper; reconsideration and withdrawal thereof is respectfully requested.

**Should the examiner maintain any of the rejections of record, then the examiner is respectfully requested to specifically address applicants' arguments and explain in detail why such arguments are deficient. This information is necessary so that applicants' can thoroughly evaluate the merits of proceeding with this case, and/or to form an appropriate record for the possibility of an eventual appeal.**

Therefore, in view of the amendments and remarks herein, the present application is believed to be in condition for allowance, which action is earnestly solicited. Should the examiner have any questions, she is urged to contact the undersigned at the number listed below.

Respectfully submitted,



Ralph J. Mancini  
Attorney for Applicants  
Reg. No.: 34, 054

Akzo Nobel Inc.  
Intellectual Property Department  
120 White Plains Road, Suite 300  
Tarrytown, NY 10591  
(914) 333-7454